

WHAT IS CLAIMED IS:

1. A calculation method for producing a recursive digital filter, implemented in a signal processor working with integers, comprising a stage of calculating the output signal of sample n based on an algebraic sum of input and output values of signals sampled at the point in time considered and at previous points in time, to which coefficients characteristic of the filter have been assigned, wherein the stage is coupled with two other calculation stages, in one calculation stage the scale factor chosen is applied to the remainders of the integer divisions, the remainders being the result of calculating the output signals of the previous samples, and in the other calculation stage rounding to the default integer value coming from dividing the output signal by the scale factor is replaced by rounding to the closest integer to the real-number quotient.

2. A calculation method for producing a recursive digital filter, implemented in a signal processor working with integers, comprising a stage of calculating the output signal of sample n based on an algebraic sum of input and output values of signals sampled at the point in time considered and at previous points in time, to which coefficients characteristic of the filter have been assigned, wherein the stage is coupled with another calculation stage in which the scale factor chosen is applied to the remainders of the integer divisions, the remainders being the result of calculating the output signals of the previous samples.

3. A calculation method for producing a recursive digital filter, implemented in a signal processor working with integers, comprising a stage of calculating the output signal of sample n based on an algebraic sum of input and output values of signals sampled at the point in time considered and at previous points in time, to which coefficients characteristic of the filter have been assigned, wherein the stage is coupled with another calculation stage in which rounding to the default integer value coming from dividing the output signal by the scale factor is replaced by rounding to the closest integer to the real-number quotient.

4. A recursive digital filter produced by using the calculation method according to claim 1.

5. A recursive digital filter produced by using the calculation method according to claim 2.

5 6. A recursive digital filter produced by using the calculation method according to claim 3.

7. An active sound protection system using the recursive digital filter according to claim 4.

10 8. An active sound protection system using the recursive digital filter according to claim 5.

9. An active sound protection system using the recursive digital filter according to claim 6.

10. A negative feedback regulation system using the recursive digital filter according to claim 4.

15 11. A negative feedback regulation system using the recursive digital filter according to claim 5.

12. A negative feedback regulation system using the recursive digital filter according to claim 6.